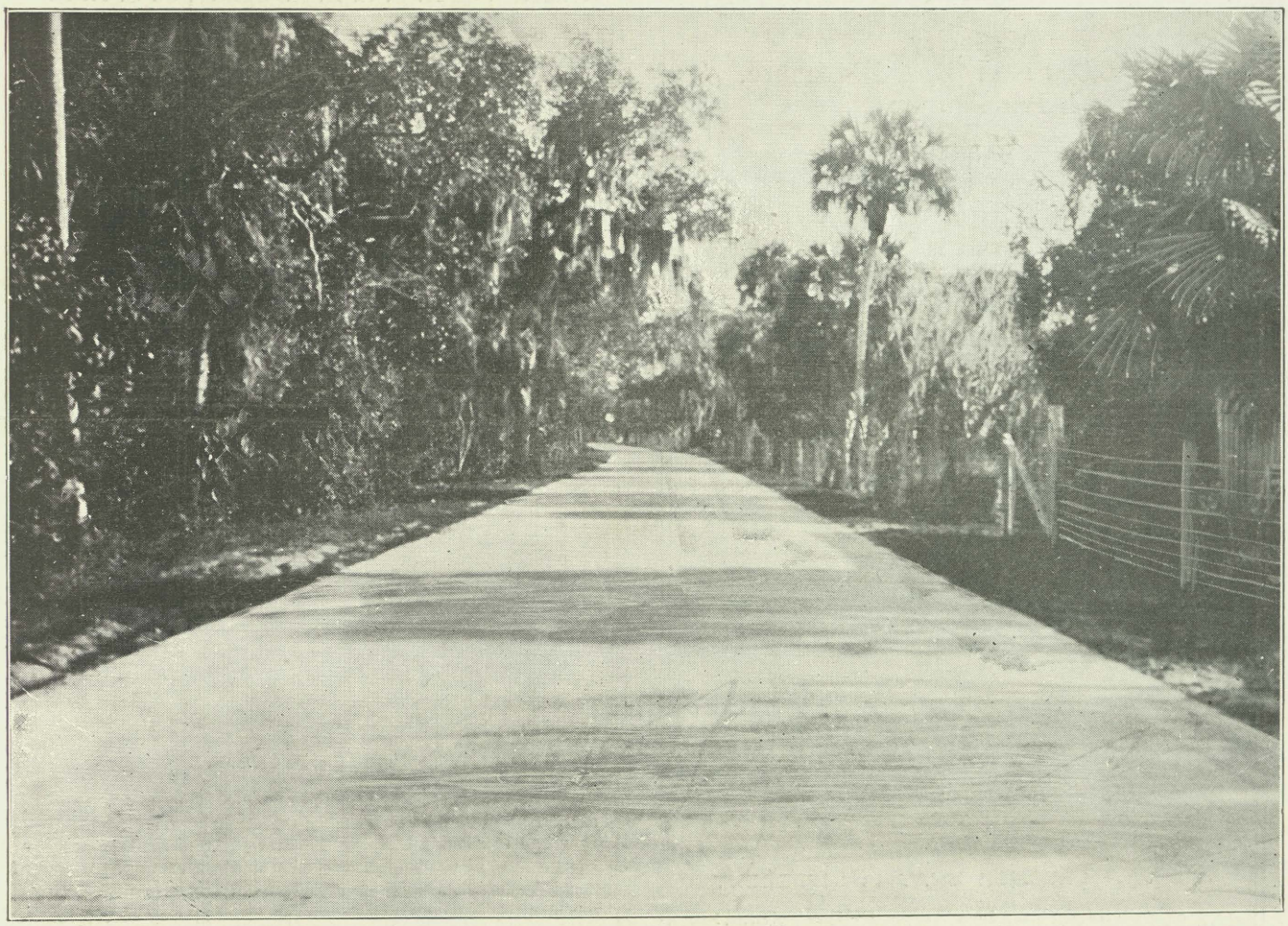
FLORIDA HIGHWAYS



Road No. 4, Project 36-B, just South of Sebastian River in St. Lucie County. Plain Cement Concrete Construction

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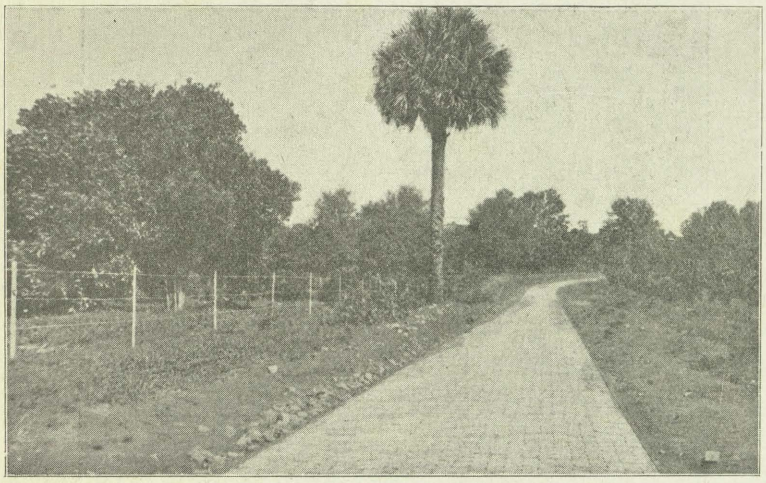
FLORIDA HIGHWAYS



Vol. II FEBRUARY, 1925 No. 3

Governor Martin's Address to the Department

At the quarterly meeting of the Department held in Tallahassee, January 15th, Governor John W. Marton met with the members, and addressed the Department as follows:

Chairman H. B. Phillips and Gentlemen of the State Road Department:

I am taking this opportunity of appearing before you so soon following my inauguration to assure you of my interest in the Road Department and my purpose to co-operate with you in an effort to give to the people of this State service.

It shall be my purpose to meet with you from time to time with the object of keeping myself thoroughly informed as to the work of the State Road Department and its progress, and in every possible way to aid and assist in promoting efficiency.

I shall seek to acquaint myself with policies and operations of all the Departments of the State Government, especially and particularly those departments in the conduct of which the Governor shares a definite and fixed responsibility.

The Chief Executive has not discharged his full duty and responsibility to the people when he has appointed the members of a Board as provided by the law. His responsibility continues throughout the term of his administration and he is ultimately looked to for results.

It is not my understanding that the Governor, however, should arrogate to himself all knowledge and attempt to usurp the functions or legal powers of the Boards, but, he, the Governor, should have fixed policies which he should make known to these bodies, and if it be found that his views touching essentials are irreconcilable with those held by individual members of the Boards who hold their positions by appointment of the Governor, then in the interest of harmony and efficiency those members who find it impossible to harmonize their views with his should not continue to embarrass the administration by remaining a part of it in name only. I realize that I am employing very plain language, but no good purpose can possibly be served by indulging in generalities and vague statements. In other words, right in the intial stage of this administration, there should be complete understanding and perfect frankness in both word and action. I wish to announce that I propose to take a very active interest in the Road Department, because good roads affect all of the people of every section of the State in a very vital way, and because I have promised the people that I would see that they get good roads, and as speedily as possible. I am further convinced that the people would have the Governor take an active part in the work of the State Road Department, and other departments of the State Government, and this I shall do. I shall call upon the Chairman of this Board at intervals for information regarding progress being made upon projects under way and when they will be completed and open for use. I shall

THE GOVERNOR OF FLORIDA

Hon. John W. Martin of Jacksonville, who, on January 6th, was inaugurated Governor of Florida

interview you as to projects contemplated and the needs of the immediate construction of different roads in various sections of the State.

I have requested of the Chairman of the Road Department, and he has responded with the information regarding the Kissimmee-Melbourne Road; the Waycross-Jacksonville Road and other roads of importance under construction, and have been given the assurance by him of their early completion.

It will be the policy of this administration to take the people into its confidence completely and to ask for co-operation and support in carrying on the affairs of their Government. It will further be the policy of this administration to give to the people of this State information at all times pertaining to their business and the conduct of same.

I desire now to request of your honorable Board the mileage and the probable cost of constructing and hard surfacing the trunk lines of the State which have been designated and authorized by the Legislature.

I would further like for your honorable Board to furnish me the amount of money received from the gasoline tax, the automobile license tax, and the amount derived from other sources, Federal and otherwise, for highway construction in this State.

I would further like for your honorable Board to instruct your engineers and those in charge of building new roads in Florida under your supervision, where it becomes necessary to make detours, to see that these detours are plainly marked so there will be no question as to the directions. Failure in this regard has been a source of much annoyance to the public using the highways.

I would further ask that your honorable Board endeavor to make these detours as passable as possible in order that the public may not be subjected to unnecessary inconvenience and hardship.

I would further ask that your honorable Board communicate with the County Commissioners in the respective counties where these detours are necessary and call upon them to assist the State Road Department and co-operate with the Department in an effort to serve the public while the State roads are under construction. I would also ask that your honorable Board report to me any failure on the part of the County Commissioners to assist your Board in keeping these detours in good condition. It seems only reasonable that the County Commissioners of the several counties through which the roads are being constructed by the State Road Department lend their assistance in the keeping up of these detours. The Governor feels that he is not expecting too much of the County Commissioners when he asks them to do so.

I am happy to advise you gentlemen that this administration is going to use every particle of energy

(Continued on Page Twenty-Three)

Report of the Chairman Submitted at the Regular Quarterly Meeting Held in Tallahassee, January 15th, 1925

To the Members and Officials of the State Road Department of Florida:

Gentlemen:—Your Chairman begs leave to submit his Report of the operations of the Department since our last meeting held October 27th, 1924.

Your several directions as to entering into contracts with counties have been carried out and such contracts have been prepared and executed except in the case of Putnam County. In this case it will be necessary to make a number of surveys of the routes of the several roads, in order that an agreement and full accord may be had with the county authorities as to the definite location of the roads. These surveys are now being made and will shortly be completed; at which time it is hoped that an agreement will be reached whereby we will be able to execute the contract with the county as directed by the Department.

Arrangements were made so that a survey of that portion of the Tamiami Trail extending from Ft. Myers to the Dade County line might be commenced as soon as weather and water conditions would permit. An engineer has been secured for this purpose, the work has been commenced and will be vigorously prosecuted in order that the route of the road across the Glades may be completed during the dry season which usually prevails in that section of the State the early part of the year.

In view of the fact that the members have received a number of inquiries as to status of work on the Kissimmee-Melbourne road and what is commonly known as the Waycross road, I beg to report as follows regarding these two projects.

It will be recalled that at our October meeting the state in which the Kissimmee-Melbourne road was left after the disastrous flood which had recently occurred, was explained to the Department and also the plans which had been made for repairing the damage to the embankment being constructed across the St. Johns River and the lowlands adjacent thereto. As soon as the high water receded sufficiently the work of building the incompleted portion of the embankment was begun and since then has been prosecuted as vigorously as the conditions of the water level would permit.

The members of course understand that there has been no lack of planning for this work or provision being made for the same. The work is being done as rapidly as conditions will permit and the embankment and the bridge across the main channel of the river will shortly be completed in accordance with the plans which were made as soon as an inspection could be had after the flood water had receded to a small extent. As soon as this embankment is completed travel may pass over the road without trouble.

As you know, a contract for placing the rock on the whole length of the road from Melbourne to the Osceola County line was awarded to Noll and Noll. The contractors managed to get rock on that section of the road extending from Melbourne to the east end of the embankment, when it appeared impossible for them to proceed and complete that section of the road lying west of the river. After much correspondence, we reached an agreement with the contractors and surety on their bond, whereby they could be paid for the work done and the contract canceled as to the remaining part of the road, thus leaving the way clear for the Department to undertake the completion of the road. Our Chief Engineer will submit his opinion as to how this work can best be done.

With reference to the Waycross road, you will recall that the original plan for building this road was that the southern ten miles should be made a Federal Aid project and be surfaced with gravel of the same kind as that placed on the Georgia side and that the northern twelve miles should be finished as a sand-clay road. This plan was afterward changed to the extent of building the Federal Aid project as a penetration road. The sand-clay project was completed and was maintained in better condition for travel than much of the road on the Georgia side north of Waycross. About the time of the completion of the Federal Aid project, the Department directed that a contract be let for the hard surfacing of the northern portion of the road. This contract was promptly let and the work of building the road has proceeded in due course and will shortly be finished in accordance with the terms of the contract awarded as directed by this Board.

I report that advertisement was made inviting bids for the construction of a bridge across Escambia River and the north approach on the west side of the same. Also, for the construction of a bridge across the Suwannee river and trestle approach on the west side thereof, on Road No. 1. Tabulations of the bids received were sent you by mail. The matter of the disposition of these bids will be submitted for your action.

It will be necessary at this meeting to adopt a tentative budget for 1925 and fix a time and place for a public hearing before adopting the final budget. Sundry reports and estimates to aid you in fixing upon a budget, have been prepared and will be submitted to you.

This being the first meeting of the year, it will be necessary to elect a Chairman and Secretary.

The construction work of the Department has proceeded in due course with no unusual delay, with the exception that some of our contract work is being rather seriously hindered by the difficulty some of the contractors are having in securing efficient labor. In some cases also our work has been seriously hindered because of the difficulty of getting delivery of sufficient rock from day to day to keep the projects going continuously. Our chief engineer informs me our work as a whole is running short from sixty to a hundred carloads of rock per day of the amount needed to keep the work going as rapidly as it should. Our chief engineer will be prepared to

(Continued on Page Twenty)

Florida Highways

Published Monthly
Official Publication of the State Road Department

This magazine is edited in the offices of the State Road Department, Tallahassee, and published monthly. Subscription rate, one dollar per year. Permission is granted to republish, with proper credit, the matter contained herein.

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B. A. Meginniss, Attorney for the Department, Editor and Business Manager

Volume II — February, 1925 — Number 3

EDITORIAL

GOVERNOR MARTIN

On January 6th, in the presence of what is generally conceded to have been the largest crowd ever assembled on a similar occasion, and with ceremonies appropriate to its importance, Hon. John W. Martin of Jacksonville, and a native of Marion County, was inaugurated Governor. As Chief Executive of the State he will direct its administrative destinies for the next four years.

Always an ardent advocate of the cause of good roads, Governor Martin in his campaign and in his public utterances since his election has given emphasis to the important part which the construction of permanent roads in Florida will play in his administration.

We had hoped to be able to present in this issue a contribution from the Governor but the pressure of official duties following his inauguration made it impossible for him to prepare such an article at this time. However, he has agreed to contribute to the magazine for its next issue and from time to time, and we can accordingly assure our readers that it is only a pleasure deferred. His address before the quarterly meeting of the Department is printed elsewhere in this issue.

On another page is reproduced an excellent likeness of Florida's new Governor. Florida Highways joins with the people of Florida in congratulating him and wishing for him a prosperous and successful administration. There is abundant evidence that this wish will be amply fulfilled.

THE ROAD OF HAPPINESS

By O. Lawrence Hawthorne.

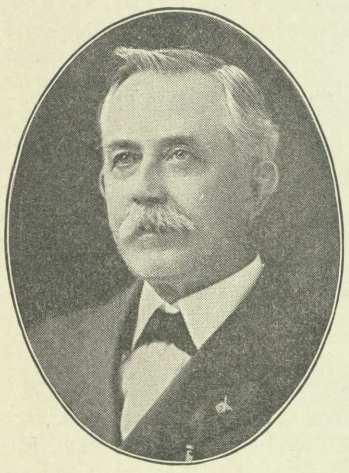
Across the rolling hills of life
A friendly highway leads,
A road whose every wondrous mile
Is paved with noble deeds.
For any man this course begins
Where will and judment meet,
Where solemn purpose points the way
And kindness guides his feet.

This highway is the only road
That leads to great success;
No other trail, no sidelong path
Will find true happiness
Though up and down its route may run,
It carries straight and far
And gains at last that haven where
Life's great possessions are.

The youth who sets a worthy goal
And formulates a plan
Of progress that enables him
To serve his fellow man
Begins at once to know the joys
That glorify and bless
The lives of those who daily walk
The Road of Happiness.

—Michigan Roads and Pavements

Chairman's Column



LOCATION OF STATE ROADS WITHIN THE COUNTIES

In arranging for issuing bonds by counties and by road and bridge districts, it has become quite a general custom to write into the resolution calling the election a provision stating that the proceeds of the sale of the bonds shall be expended in the construction of certain roads named in the call and stipulating that these roads shall be so located as to run to or through certain towns and communities. This practice is in line with a growing tendency to take from public officials a necessary discretion as to the handling of public funds and doing public work.

It is a commentary on the curious and unfortunate state into which our public or official life has fallen. The people themselves choose the county commissioners or bond trustees, as the case may be, and yet the people cannot trust the officials chosen by them in the matter of designating and locating the roads upon which the bond funds are to be expended.

There may be some reason for this where the bonds are to be used only in construction of county or purely local roads. It is a dangerous practice, however, in those cases where funds are voted to be used to aid in the construction of State roads especially where these State roads are part of the Federal System. State roads are designated by number and certain control points are named. Now the State reserves the right to locate the route of the road between these control points.

To illustrate: State Road No. 3, is designated as commencing at or near Wilds Landing on the St. Marys River and extending to Orlando, via Jacksonville, Orange Park, Green Cove Springs, Palatka, East Palatka, Crescent City, DeLand and Sanford.

Now the towns named on this road are the control points and the road must be located so as to pass via these towns, but the State has the right to locate the line or route of the road between these points, and this right and discretion on the part of the State cannot be controlled by county or district authorities.

In case of the Federal System of Roads, the Federal Government has named certain control points on the roads and reserves the right to fix or designate the line or route of the road between these points and this right or discretion cannot be controlled by the State.

Of course, the State with its own funds could build on a line or route not approved by the Federal authorities, but no Federal aid could be gotten on such section of road and the section of road so built would not be accepted as part of the Federal System.

In several cases it has happened that in calling an election by the district or counties to vote bonds to aid in the construction of State roads, provision was inserted in the call that the road should go through a number of small villages, requiring the locating of the road on a line or route which will not be approved by the State.

This means conflict and in one case is preventing the construction of the road. The State in all cases tries to accommodate the local towns or communities, but it will not expend State funds in building a road upon a wholly impractical line or route.

Therefore it would seem to be wise in all cases where counties or districts propose to vote road bonds and expect State or Federal aid in the construction of their roads to consult the State authorities as to the location of the roads before writing the call for the election. By doing this conflict will be avoided and the way will be clear for co-operation between the State and local authorities.

OBSERVATIONS

When the butcher gets a new automobile delivery wagon, his customers all wonder nervously what he did with his old horse.

A good driveway is a thrive-way for the farmers.

"Say it with safety and save the flowers."

A chicken at the wheel often leads to the kind of driving that means a chicken under the wheel.

Always try to beat the engineer to the crossing, it sort of livens up the dullness of his life.

Roads are the veins and arteries of community life. Bad roads mean stagnation, heart failure and social death.

A good road is not the end of all things desired, but it is often the means to that end.

Roads have existed since the earliest times. Sometimes the Bible highways, sometimes ways and sometimes roads. No sooner is a country settled than roads are laid out and built. Roads antedate history.

Another advantage of crossing crossings carefully is that you get on the other side.—Dallas News.

The Nation Moves Toward Safety First at Last

By WILLIAM ULLMAN

HOOVER WARNS MOTORISTS TO REDUCE TERRORS OF ROAD

Secretary Hoover, in opening the National Safety Conference, warned the delegates that the fullest development of the automobile demanded a reduction of its terrors.

"The automobile is the greatest development of twenty years, both economically and socially," said Mr. Hoover. "But if we wish for its fullest development we must reduce its terrors. And in these aspects I have found a most gratifying unity of opinion both in the industry and all of its collateral brnaches.

"The automobile is no longer a luxury—it is a complete necessity. It has added recreation, efficiency and vision to the American people. Probably 75 per cent of our people participate in its use. It is here to stay, and to stay in constantly increasing numbers.

"If it has brought about the present traffic conditions so quickly that we have been unable to cope with it, if our roads and streets were laid out for other purposes and are inadequate to the situation, then it is fitting and proper that the public officials, the transportation interests, the business interests, the motorists, and those engaged in the business of alleviating suffering should gather together to assist in straightening out the tangle."

If the life of a single child is saved within the next year as a result of the program adopted by the National Conference on Street and Highway Safety, meeting in the National Capital, December 15 and 16, the time and effort will have been well utilized. This was the opinion expressed and reiterated by motor club officials, automobile manufacturers, railroad chiefs, police superintendents, university professors, economists and social welfare workers—all participants in the first national effort to minimize the staggering loss of life and injury resulting from traffic accidents.

Initiated by Secretary of Commerce Herbert Hoover and heartily endorsed by President Coolidge, the conference attracted some 400 delegates, representing every phase of industrial, political and educational activity looking toward the solution of this grave problem. They worked in unison and, after two days of discussion and debate, evolved a Thesaurus on traffic, embracing every possible phase of the subject, which will form the basis for State and municipal action.

The job has just been started. It will take years of effort and education, in the opinion of Secretary Hoover, who directed the proceedings of the conference, to accomplish the task outlined: that is to minimize the 23,000 annual deaths from traffic accidents, the 680,000 serious personal injuries, and the $600,000,000 economic loss. The conference will be a continuous organization so long as life and property are thus endangered, whether through negligence or ignorance. With this idea in mind, the conference adopted a resolution, submitted by George M. Graham, chairman of the Public Relations Committee, providing that a second national conference on street and highway safety be called about a year hence, and that a joint committee be appointed by the Secretary of Commerce to continue the studies already undertaken.

The program adopted by the conference covers virtually every angle of the traffic problem. It is comprehensive and instructive, representing the results of nine months of labor and study by eight special committees of recognized authorities appointed by Secretary Hoover. The committee reports include discussions and recommendations on statistics, traffic control, construction and engineering, city planning and zoning, education, the motor vehicle, and public relations.

Co-operation and co-ordination were emphasized as the two cardinal principles on which the committees should work—co-operation among all of the agencies seeking to promote safety and co-ordination of the governmental and civic agencies which are engaged in it.

"Growth of our population and industry and the increasing perplexities of our civilization demand greater co-operation if we are to solve our problems," said Secretary Hoover. "By stimulation of the local community, by education of the local community to greater activity, you are promoting a new form of government, which is far wiser and far more important in the solution of our problems than the great concentration of government."

Probably in no conference of like size, embracing so many elements of apparently conflicting interests, has there been such unanimity of opinion and such willingness to compromise and work together. The recommendations of the committee, almost without exception, were adopted by the conference as recommended.

Grade crossings, however, proved to be a controversial question. The Committee on Public Relations, headed by Mr. Graham, recommended that the "elimination of grade crossings, either by relocation or highways or by grade separation, constitutes the only solution of the problem." C. L. Bardo, general manager of the New Haven Railroad, proposed to read into the recommendation that the conference go on record in favor of the full stop law at all grade crossings. Discussion on this subject brought forth serious objections to such a law.

While this law is on the statute books of not a few states, a preponderance of opinion seemed to indicate

that it is either ineffective or undesirable, in that it works an unreasonable hardship on the motorist. Prof. A. H. Blanchard, University of Michigan, strongly opposed the amendment on the grounds that it was unreasonable to expect motorists, approaching grade crossings that are used probably once a day, to come to a full stop, particularly where the flow of traffic is unusually heavy.

An interesting angle of the problem was brought forth by Frank Page, highway commissioner of North Carolina, who said the stop law at crossings does not prevent accidents. He said the reduction of accidents in that State were due, not to the stop law, but to the elimination of 308 grade crossings since 1921. He offered a counter-proposition to the railroads that when the highways carry more people across a given grade crossing than the railroads, that the railroads stop their trains and allow the motorists to proceed uninterrupted.

After further discussion on the merits of a universal grade crossing stop law, F. T. Singleton, of the Indiana Public Service Commission, suggested that there be placed in the hands of State authoirties the power to designate dangerous crossings at which motorists must stop. Mr. Bardo accepted Mr. Singleton's suggestion and withdrew his original amendment providing for a universal stop law at all grade crossings. Mr. Singleton's suggestion was adopted by the conference, after endorsement by Mr. Graham, speaking for the automobile interests.

Division of opinion also was evident on the matter of hand signals. The report of the Committee on Traffic Control, headed by Major Roy F. Britton, president of the Automobile Club of Missouri, recommended that "a single cautionary hand signal, made by extending the arm well outside the vehicle, as a warning that the operator is about to turn, slow down, stop or back" is "preferable to a code which attempts to show more exactly what the operator intends to do."

Traffic experts, such as Inspector Albert J. Headley, of Washington, D. C., advanced the argument that pedestrians as well as motorists are well familiar with the three-way signals used in that city and in other large cities in the country and that they guide themselves accordingly. To substitute the single signal where more are employed would result in confusion and a multiplication of traffic mishaps. The single cautionary signal was adopted; however, the principle of hand signals as a guide to vehicular motor driving met with unanimous approval.

Motor club officials, in caucus, agreed upon strict examination of drivers, retention of red tail and parking lights and for the adoption of yellow stop lights and amber or yellow cautionary lights. They also went on record as favoring universal and uniform certificates of title. All of these recommendations were made a part of the permanent conclusions of the conference.

An attempt to read into the recommendations a compulsory automobile insurance clause, which was also opposed by motor club officials, was flatly re-

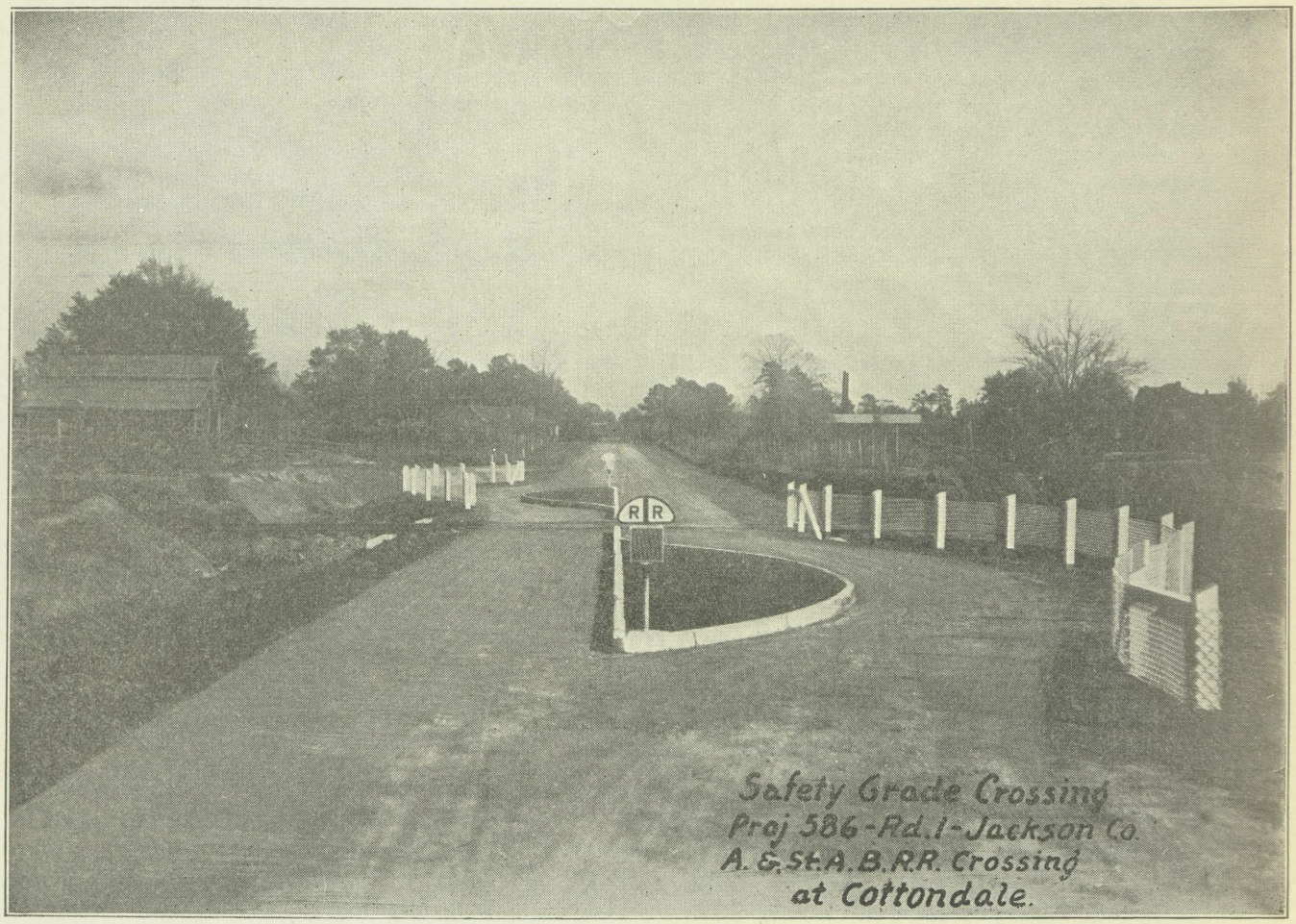
PRESIDENT COOLIDGE ADDRESSES DELEGATES TO NATIONAL CONFERENCE ON HIGHWAY SAFETY

As an evidence of his deep interest in the problem undertaken by the National Conference on Street and Highway Safety, President Coolidge invited the delegates to meet with him at the White House, where he reassured them of the great importance of their task. The President said:

"The National Conference on Street and Highway Safety has been called by the Secretary of Commerce for the devising of means and the making of recommendations toward the lessening of the numberless accidents which now kill and maim so many of our citizens. Few conferences are more opportune or deal with graver affairs. With the deplorable and continuing increase in highway mortality and injury the time is highly appropriate for a comprehensive study of the causes, that we may have proper understanding of conditions and so may intelligently provide remedies.

"The problem is but one of those inherent in advancing civilization. The increasing demands upon our highways from a growing population, the development of new uses, the imposition of modes of transportation not contemplated when they were created, have brought about congestion, confusion, and conflict, until the yearly toll of traffic accidents has reached an appalling total. If the death and disaster that now falls upon innocent people, through the year and over our country as a whole, were concentrated into one calamity we would shudder at the tremendous catastrophe. The loss is no less disastrous because diffused in time and space. The evil you are combating is so widespread as to be of national concern and we do well to look at it with a countrywide vision. But its solution does not rest in national action. Highway control is primarily for the States, and it is best that this is so. We cannot regulate local traffic by Act of Congress. Means to overcome the difficulties to keep our complex traffic moving with order and safety, must be found by the States. It is a proper function of Federal authority to mobilize the best experience in each part of the country that it may be applied elsewhere to the end that rules may be wise and uniform. But uniformity, while of the greatest value and highly advisable, so far as shifting local requirements will permit, should not be imposed by the flexible fiat of central power. Rather it should come from the common desire of the States ti give the highest protection to their people, to regulate traffic in the most efficient manner, with final realization in the attainment of a common standard of perfection.

"This is the high ideal towards which you are striving and your task is the finding and suggesting of methods of accomplishment. You have already done much by impressing upon the minds of our people knowledge of the terrible toll of traffic accidents. The further course of action and regulation will largely depend upon your recommendations. The undertaking is of supreme value, and you have my best wishes in your efforts."



Type of Safety Grade Crossing Designed by the Department and in use on State Roads

jected on the grounds that compulsory insurance, in many instances, proves to be a license for recklessness. Greater courtesy between drivers and between driver and pedestrian with the more universal adoption of the "After-You" policy was set forth as one of the cardinal principles of the road making for safety.

While the conference proposed to universalize traffic regulations so far as possible, it made no attempt at federalization. On the contrary, the concensus of opinion was strongly in favor of each State and municipality working out its own traffic problems in the light of the recommendations adopted.

The Federal Government's relation to the safety program was expressed as "one of encouragement, of assembling and distribution of information, and the development and use of the best practices, believing that uniformity will be secured by voluntary action of the States." President Coolidge, who addressed the delegates, emphasized this point, expressing confidence in the ability and determination of State and local organizations to minimize the traffic hazard.

The topics discussed in the safety program cover the entire field as suggested by the committee titles already mentioned. The committee reports left no phase of the subject untouched. Severe penalties for reckless driving and strict enforcement of such city ordinances by the local courts were advocated by police officials and others charged with the duty of public welfare.

Reporting and investigation of accidents would be placed on a statewide basis. Regulation of speed of motor vehicles was left to the States and municipalities with the recommendation that no municpality should establish a speed limit lower than fifteen miles per hour and that a speed in excess of thirty-five miles an hour in the rural districts is considered unreasonable and undesirable.

Among other topics, the conference discussed and recommended questions relating to the construction of streets, highways and bridges, detours, curves, guard rails, snow removal, parking space, playground and school protection, intensity and position of automobile lights, tires, brakes and steering gears.

Specific suggestions to automobile manufacturers were adopted by the conference with the request that they give particular attenion to the following:

"The engine accelerator pedal should be located at a sufficient distance from the brake pedal to minimize the danger of applying the accelerator when intending to actuate the foot brake. The brake pedal should be so constructed as to minimize the danger of the driver's foot slipping from it when he wishes to actuate the foot brake. Motor vehicles should be so designed as to permit braking with engine on severe grades without injury to mechanical parts. Service brakes should be so constructed as to be capable of simple and safe adjustment by operator throughout the life of wearing parts. Ratchets of hand brakes

should be so designed and constructed as to have greater durability and certainty of operation."

Regarding street and highway construction, the engineering committee recommended that "a clear view of approaching vehicles for at least 300 feet should be provided at all points on highways of primary importance." This, it was pointed out, might necessitate removing of trees, shrubs and sloping banks on or off the right-of-way at curves and intersections, and cutting down sharp hill crests. The grades of each street at street intersections should be maintained, particularly those of main arteries of traffic. The radius of curvature of curbs should ordinarily be not less than fifteen feet, and twenty feet in special cases.

It was the opinion of the conference that the width of any motor vehicle, including body, load, chassis and hub caps, be limited to ninety-six inches.

Unanimous support was given to the recommendation that special traffic courts should be established to permit prompt and effective handling of cases of traffic violation, both rural and city, and that such courts be under State supervision to insure uniformity of administration.

With the final conclusions of the conference ratified, now will it go about acquainting the millions who are interested in this problem with these recommendations? This phase of the question has not been left untouched by Secretary Hoover's committees.

The political head of every community of 5,000 population or less on main-traveled highways soon will receive a summary of the conclusions of the conference. A complete set of the reports and conclusions will be sent to the political head and leading civic organization in every city of 5,000 to 25,000 population. In larger cities steps will be taken to bring about the formation of voluntary safety committees. These commitees are expected to put into effect the conclusions of the conference and to consider the continuation of an organized safety program. Schools, chambers of commerce, other commercial or trade bodies, motor clubs, central labor bodies, women's clubs and similar organizations are urged to join in this work.

The task of promoting the program outlined during the coming year has been left with the Committee on Public Relations, which consists of twenty of the leading business heads and thinkers in the country.

The problem is gigantic. It has enlisted the best minds in industry, political life and public welfare. They have set as their goal the perpetuation of the life of a single child. How much more will they accomplish? Well, that in large measure, depends upon you.—**The American Motorist for January, 1925. Reprinted by permission.**

The Long Road

Quiet roads and a flowered by-way,
Far from the busy haunts of men;
Sunshine, and then the deep'ning shadow
Lies on the gold and green again.
Pines, and a blur of lithe young grasses,
Dark, still pools in a Western glow.
Spread of wings and the last bird passes
A cypress swamp as the sun dips low.
Dusk, and the sweep of wood and hollow
Is etched in gray; no stars appear—
Twilight gone and the night to follow,
But the end of the long, lond road is near.

—C. B. Roth.

We are indebted for the foregoing gem to Mrs. C. B. Roth, Editor and Manager of the Lynn Haven Citizen. Mrs. Roth evidently sympathizes with us in all our efforts, for she wrote us in connection with the contribution of the poem as follows:

January 7, 1925.

Florida Highways Magazine, Tallahassee, Florida,
B. A. Meginniss, Editor.

Dear Sir:—Reading your magazine each month with great interest and frequently quoting it in the columns of my paper, I am sending you a contribution which was inspired by an auto tour over Florida highways. Noting that you sometimes use verse that is appropriate to the road subject I submit this either for your columns or for your waste basket, and am frank to say that most of the poetic effusions that are sent to me are consigned to the latter receptacle. The exploiting of good roads for Florida is only second to boosting the State itself and I believe the State Road Department is performing wonderful results in their work.

With best wishes for all departments,

Sincerely,

(MRS.) C. B. ROTH, Editor and Manager.

Twenty Years of Road Building Progress in the United States

By THOS. H. MacDONALD, Chief, U. S. Bureau of Public Roads

In the history of American road building there are two crucial periods which have influenced profoundly the subsequent development of the nation. Each marks a change in the attitude of the people toward highway transportation. In respect to the highway they are revolutionary changes—the first a change from busy, throbbing life to partial desuetude, the second a renaissance. In their bearing upon the history of the country they are evolutionary in character—each representing an improvement in transportation in that there is involved a better adjustment of facilities to the needs of the people.

Viewed historically both are abrupt changes; both are introduced by the invention of a new kind of self-propelled vehicle. The first is ushered in by the steam locomotive. Almost, it is possible to name the day on which the change occurred—Independence Day, 1829. For, certainly there were in the events of that day all the potentialities which changed the course of settlement and upbuilding of this young country from a gradual, intensive growth outward from the eastern setlements—slowly, almost painfully, securing and cultivating the western possessions mile by mile—to a swift conquest of a continent—wide empire through the distance-defying agency of the railroad. For on that Fourth of July, in the city of Baltimore the cornerstone of what has since come to be one of our great railroad systems was laid by Charles Carroll of Carrollton, the last surviving signer of the Declaration of Independence. It was a momentous act, and that should occur on the anniversary of the greatest day in American history is one of those inspiring coincidences which, in the history of nations, seem the evidence of a divine plan, so altogether fitting are they. The Fourth of July, 1829 was as truly an independence day as that first Fourth of July in '76 and who shall say that its consequences were not of equal moment to the American people. In 1776 they threw off the fetters of an unjust king; in 1829 they broke the bonds which restrained their economic development which, shuttling back and forth across this continent, were to weave the fabric of a mighty and homogeneous empire in the shortest time in history.

On that day when the country turned to the railroad the highway lost its significance as a major factor in the economic life of the nation. It rapidly fell back into a place of comparative unimportance, and as the railroad grew, the highway sank to a lower and still lower estate. Its maintenance was neglected. At its lowest level, which was reached as the railroad approached the zenith of its development in the early nineties, it was no more than a neighborhood path. Those who laboriously followed its sinuous up-and-down course over "thank-you-marms" and bowlders rarely encountered a stranger. They met their neighbors only with whom they joined in mutual commiseration for the hardships of the road. And the very roads that should have made communication easy became the barriers which confined to their homes the long winters through the hardy and hard-working farmers who had forgotten what a road might be.

Bicycle Awakens Good Roads Interest

The first stirring of new life was felt in the late eighties and the early nineties. The bicycle was responsible. Its devotees sought pleasure roads. They organized clubs of wheelmen and the century run became the evidence of cycling prowess. And well it might. A hundred miles by highway was a greater distance than any man had traveled in the eastern half of the country for more than a half century. In response to their demand, reinforced by the early motorists, the vanguard of whose army arrived in the late nineties, first one, then another and another of the States began to make preparation for the improvement of the roads; and certain pioneer commonwealths, recognizing that the roads were destined no longer to remain the locally restricted arteries of travel they had long been, created State highway departments to administer the work of improvement on a scale commensurate with the longer range of travel.

It is significant of the stagnant state of the road building art in the nineteenth century that when these State departments set out to improve the roads for the cyclists and the motorists they could build no other kind of road than that which John L. McAdam had devised in the early years of the century. And not many years were required to convince them that that kind of road would not do at all. The automobiles destroyed them as fast as they were built and passengers and countryside were coated with dust in the process.

With the increasing skill and ingenuity resulting from their few years of new experience the highway builders went to work to devise a type of road that would withstand the destructive action of the motor vehicles, and soon their efforts were rewarded in a measure by the discovery of crude methods of combining tars and asphalts with the stone roads. Popular resentment against expenditures of public funds for the accommodation of the few who in the early days were rich enough to own motor cars was overcome by the reduction in the price of the vehicles which rapidly brought them within the means of the many. As a result the road builders were permitted to improve the new discoveries in road building and go on beyond them to the development of other types. But whether the "good roads" movement could ever have developed into the solid industry it now is, had it not been for the development of the motor truck is open to question. Certain it is that without the freight-carrying motor vehicle there would not long exist the strong economic justification of road im-

provement that there is now. And, as nearly as it is possible to determine it, this strongest of all arguments for road improvement first made its appearance just twenty years ago.

Real Highway Progress Began in 1904

In 1904 only 411 motor trucks were manufactured in the United States. In the same year the automobiles were numbered by the tens of thousands. In twenty years these main, impelling causes of better roads have grown to two and fourteen millions, respectively. In the beginning the motor car, like its predecessor the bicycle was a pleasure vehicle only—a doubtful pleasure perhaps. By perfection of its design the motorist has now been freed of the numerous troubles which beset the path of his forerunners, and the automobile is finding a place for itself as an instrument of business as well as pleasure. The recent traffic surveys made by the Bureau of Public Roads in a number of States show that fully one-third of passenger-car mileage is in the interest of some business pursuit, and it is impossible not to foresee that this business usage will increase in importance. As for the motor truck—it has become a downright necessity. That both types of motor vehicle will become still more numerous, especially the motor trucks, is written large in the fundamental economic facts which justify them.

For while the highways and the horse and wagon were rightly abandoned for the railroad in 1829 in order that our forefathers might quickly and thinly spread their culture over the wide, untamed spaces of their new land, the very efficiency of the railroad in performing its task has now created a condition of dense cultivation which demands a return to the improved highway and the improved highway vehicle as a short-haul supplement to the long-haul railroads. The country which has been developed extensively through the agency of the railroads is now to be further developed intensively with the aid of the motor vehicle and the highway. We have built from the periphery inward. The broad axe alone is no longer sufficient for the hewing of our destiny. We are working in close quarters and we must resort to the fine-pointed chisel for the closer work. We have cultivated the center of the field to the limit; we must now begin to plow around the margins. Between the meshes of our railroad system there is land which the railroad can not economically serve. At the centers, where the railroads meet, great cities have sprung up, and their rapidly multiplying population makes transport demands on the immediate tributary area which the railroads, unaided, can not answer. The motor truck and the automobile with the improved road offer the logical solution. It is these fundamental economic conditions which inspire confidence that the improvement of roads and the manufacture of motor vehicles must continue at an undiminished rate for years to come.

The Condition of Roads in 1904

But this was intended to be a restropect, not a prophecy. What of road-building progress in the last twenty years? Briefly the answer is that whatever progress is now evident has been made in that time. A survey of highway conditions made by the Office of Public Roads in 1904 showed that there were then in the United States only 38,622 miles of road classified as macadam or stone roads. Roads classified as gravel surface amounted to 108,233 miles; and there were only 6,807 miles of other types of surfaced roads, among which were included 2,541 miles in California surfaced with oil-mixed earth; nearly 200 miles of brick, mainly in Ohio, West Virginia and Iowa; 3,000 miles of sandclay in the Southern States; and 800 miles of shell roads in the coastal States. There were other miscellaneous types of improved roads such as 145 miles of plank in Oregon; 13 miles of bituminous macadam and 3 miles of asphalt in Ohio; and the town of Tisbury, Mass., had 2 miles of road surfaced with a mixture of tar and sand. Of the total mileage of public roads then in existence, amounting to 2,151,570 miles, nearly two million miles were not improved with any kind of surfacing material and, by reason of the lack of necessary provisions for maintenance, it is safe to say that this mileage and much of the surfaced mileage also was in a state of disrepair such as today is scarcely imaginable.

In Michigan there were 69,296 miles of public roads, of which 6,777 were reported as surfaced with gravel and 249 with stone, making approximately 7,000 miles of surfaced roads. However, as later reports showed, much of the mileage reported as surfaced with gravel really consisted merely of natural gravelly roads.

Prior to 1904 there were only 13 states which had created any kind of State agency for the supervision of road improvement, and the powers and duties of these departments were largely advisory in character. In the year 1904 two more States passed legislation creating State Highway departments, to be followed in 1905 by five others, one of which was Michigan.

The total cash expenditure for road construction and maintenance by all States in 1904 was approximately $59,000,000, of which only $2,500,000 or about 4 per cent was spent by or under the supervision of the thirteen State highway departments then in existence, and more than four-fifths of the total State-controlled expenditure was made by the four States of Connecticut, Massachusetts, New Jersey and New York.

Owners of motor vehicles in a number of States paid into the public treasuries a total of slightly more than $33,000; but most of the States made no charge for the privilege of using the roads, and most of those which did, failed to devote the money thus raised to road improvement ends. The principle of charging the motorist in accordance with the use of the road or in proportion to the road wear for which he is responsible had not yet emerged; and indeed there was yet no justification for it because the motorist's use of the rural highways was still so limited, and the service afforded by the small mileage of well kept road was so small as neither to require nor to warrant a special road charge on the basis of automobile ownership. The motorists, like all other citizens, paid for the repair and building of roads when they paid their poll and property taxes. If they preferred, they might choose in some States to work out their poll taxes, in lieu of cash payment, at the rate of a dollar a day. But all this is not to say that the

users of the roads paid nothing at all for the special privilege of use. So far as the public treasuries were concerned, that was the fact; but the better roads in those days were maintained by turnpike companies, and one did not drive far without finding progress barred by a gate, where toll was demanded to pay the cost of the improvement—and no mean toll it was! Six of these turnpike companies, surviving until 1919 in Maryland and Virginia, leveied tolls amounting to $5.05 for an aggregate distance of 187.5 miles, which is equivalent to 2.7 cents a mile. No State has yet attempted to exact any such fee from those who use its roads. To do so by means of a gasoline tax it would be necessary to levy the tax at the rate of 36 cents a gallon!

Because of the lack of co-ordinating State agencies to give harmony to the efforts of the counties, and because of the meagreness of the means at the disposal of the local governing bodies there was scarcely anywhere a continuously improved section of highway long enough for an afternoon motor ride. Interstate travel was still a thing of the future and to drive by automobile across the continent from east to west or from north to south was unthinkable. Nowhere was there a plan for the harmonious development of a system of highways covering any considerable area. Maryland's system, the first to be planned for a whole State, was still a vision which had appeared only to her future governor, the far-seeing Austin L. Crothers, and a dream it was to remain for four more years. The adoption of Michigan's own system of trunk line roads was still nine years off, and the Federal aid highway system was a conception so remote from the best thought of the day that more than a decade later it would still be entertained as a fanciful notion only.

The Federal Government's interest in road improvement was limited by the $35,000 which, in 1904, it appropriated for the maintenance of the Office of Public Roads. The Office made the most of its pittance by using it to carry on experimental work; to train local road builders through the construction of object-lesson roads under the supervision of its own engineers, and to complete the highway engineering education of a small group of engineering school graduates each year to form the nucleus of the highway engineering profession in which, it constantly preached, should be lodged the responsibility for the technical direction of construction. From the time of its creation as the Office of Road Inquiry in 1893 it had unceasingly urged the organization of highway departments in all States.

Last Twenty Years a Period of Innovation

Such was the situation in 1904. The country was then just beginning the work which has occupied it

Plain Cement Concrete Road between Sebastian and Wabasso in St. Lucie County, Road 4. Note the sweeping, graceful curve and the beautiful Indian River in the distance

continuously for the twenty years since. The improved roads of that time had been surfaced for horse-drawn traffic and because of the early ravages of the automobile it is safe to say that scarcely a single mile, with the exception of the small mileage of brick survived the ensuing five years. It is a reasonable presumption, therefore, that the now existing mileage or surfaced roads, conservatively estimated at 450,000 miles, is a product of the 20 years of effort since 1904. As for the higher types of construction, such as concrete, brick, bituminous concrete, sheet asphalt and bituminous macadam, not only have practically all of these roads been built in this 20-year period, but the very methods by which they are now constructed are also the product of this period.

Indeed, if one would characterize the period as a whole, it must be as a period of innovation in all things pertaining to the highways. At the beginning of it, roads were built, maintained, used, administered and financed as they had been for a hundred years before. In every particular in which the roads of 1924 differ from those of 1824, the difference is a development of the last 20 years. By delibrate experimentation and incidental observation new types have been developed to meet the new requirements of the motor vihicle; the design of these types has been constantly improved; machinery has been invented to cheapen cost and speed production; engineering control has become the rule rather than the exception; State highway departments have been created in every State and there has been a progressive transfer of more and more of the important road work to their supervision; the Federal Government has become an active participant; the traffic has doubled and redoubled every three or four years and has changed in character from the wholly local and purely agricultural to a movement which is largely interurban and is limited neither by county nor State borders. And with the change in the character of the traffic there has grown up a distinctly modern development in the financing of the cost of highways, i. e., the users of the roads have been called upon to pay an increasing proportion of their cost.

State highway systems have been designated in every State, and the State highway departments, equipped at last with more than nominal authority are consistently and perserveringly applying all available funds toward the completion of these main system. To this policy the Federal Government has given its unqualified support by the creation of the Federal-aid highway system made up, in the main, of the more important links of the several State systems. And the result of this selective improvement of main systems is everywhere becoming apparent in the growing mileage of continuously improved road.

Annual Construction Now Four Times as Great as in 1904

Whereas the annual construction of surfaced roads up to 1904 and for several years after did not exceed 10,000 miles, practically all of which was improved with what are now called low-type surfaces, there are now surfaced each year more than 40,000 miles, much of which is improved with pavement of high type. The annual cash expenditure has increased from $59,000,000 in 1904 to almost a billion dollars in 1924; and the percentage of the expenditure made under the supervision of the State Highway departments has grown from 4 per cent in 1904 to more than 40 per cent at the present time.

The development of a sense of responsibility for the maintenance of the highways is another of the concomitants of State highway department control, reinforced by the insistence of the Federal Government since the Federal-aid road act became a law in 1916. There is no doubt that the urgent need of increased improved mileage in the earlier years of our two decades of progress, and a too optimistic confidence in the durability of the roads built, were responsible for the failure to reserve a sufficient portion of the available revenue for maintenance purposes. What part of the investment made in these years was dissipated as a result, no one can say, but it was probably considerable. So far as the State highway departments have influence this serious defect of administration has now been practically eliminated, and marked improvement in maintenance is noticeable even on the county roads.

The best evidence of the improvement that has been made in the state of the roads is found in the large numbers of vehicles which now are to be found using them. From my office window I look down upon the entrance of one of Washington's famous hotels. The automobiles that arrive at that entrance bear the license tags of every State in the Union. I have counted as many as twenty different State licenses in the course of an afternoon ride on Maryland roads. The survey of highway transportation in Connecticut, made by the Bureau of Public Roads showed a net tonnage of commodities transported over the Connecticut highway system amounting to over a million tons in three months, and a portion of this tonnage was moved by highway more than 100 miles. Motor bus lines operate over practically every main road and provide a service as regular as that offered by the railroads. The daily delivery of milk to our large cities, formerly a service rendered solely by the railroads is rapidly being taken over by the highways. Already several cities receive practically the whole of their daily supply in that way. A similar change has taken place in the transportation of livestock from the areas immediately surrounding the stockyards; and the supplies of fresh vegetables and garden truck required daily by city consumers are now also delivered by truck instead of by railroad. The railroads, themselves, realizing the advantage of highway transportation as a supplementary service are resorting to the motor truck for the transportation of the short-haul, package freight which has for some time been handled at a loss over the rails.

One might go on enumerating instances of new and more extensive usage of the highways as evidence of the progress that has been made. The daily truck delivery service from the country to the city has been mentioned, but the similar service in the opposite direction, delivering bread, ice cream, fresh meat, canned goods, dry goods and other commodities originating or purchased in the city is of practically equal importance.

None of these things was possible twenty years ago. That they are now a part of our daily experi-

(Continued on Page Twenty)

How Shall Interstate Highways be Named and Marked?

By A. H. HINKLE, Superintendent of Maintenance, Indiana State Highway Department

A discussion of the above subject will be treated under the following heads:

(1) Reasons for Naming and marking Interstate Highways;

(2) Selection of the Through Routes to Be Given the Same Number;

(3) Shall Routes Be Designated By Name or Number or Both?

(4) Method of Assigning Numbers;

(5) Design of Field Markers;

(6) Design, Shape and Color of Guide, Danger Warning and Information Signs;

(7) Conclusions.

1. Reason for Naming and Marking Interstate Highways

Interstate highways should be properly named and marked for the following reasons: *First* and principally, as a convenience to the traveling public; *Second,* for economic reasons; *Third,* there may be a sentimental and historical phase to the marking and naming; however, certainly this latter and third factor should be subservient to the first two.

Properly Marked Roads A Great Convenience to the Public.—Usually when a stranger desires to travel to some distant point he wishes to know which is the most direct good road to travel and how it is marked It is a great convenience to him to learn by inquiring, or from a map, that a route bearing the same number will take him to his destination; or if not one and the same number, then the fewest numbers possible. This is one reason for marking the through continuous routes the same number throughout their entire length. This is a matter of convenience but frequently a great convenience, particularly to one traveling in a strange country. Hence the shortest route with suitable grades and which will be traveled most frequently, other things being equal, should be marked with the same number.

Great Financial Saving in Properly Marked Roads.—The stranger frequently travels many miles out of his way to reach his destination because of poor road marking. A through route may be so improperly marked that hundreds and sometimes thousands of vehicles a day go much greater distances than necessary and this loss may average 10 cents per vehicle mile to the owner of the machine, and 2 cents per vehicle mile to the taxpayers for maintaining this unnecessary length of road. Let us assume the very common problem that 500 vehicles per day are traveling the unnecessary length of five miles on a 50-mile stretch of road because the road has been improperly marked. The daily loss to the general public would then be 500x5x12 cents equals $300; or a yearly loss of over $90,000, all because someone was indifferent to the proper selecting and marking a system of through highways. Hence, for *economical reasons,* a through highway should be so marked as to guide traffic over the most direct route, between the point of origin of the traffic and its destination.

2. Selection of Through Routes to Be Given the Same Number

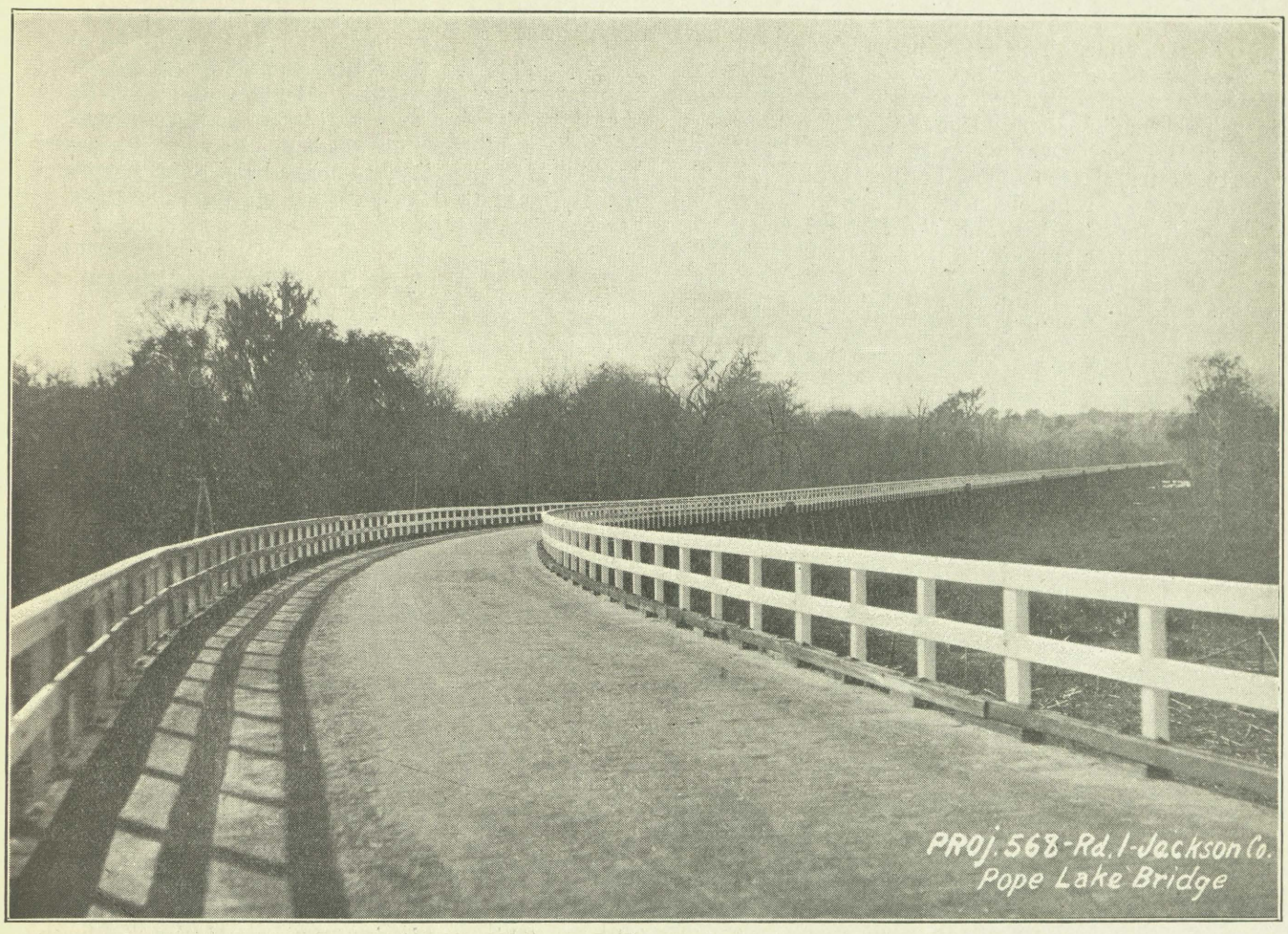
The following factors should be considered in selecting the through route to be given any one number:

(a) *Select most direct line between source and destination of most through traffic.*—Since the prime purpose in marking of interstate highways is to accommodate through traffic, it would seem that this statement needs no substantiating argument. The local traffic usually knows the local roads but the foreign, or traffic from a distance, does not. Hence in the marking of an interstate system, certainly through traffic should be given first consideration.

(b) *Select routes whose adjoining parts will accommodate (when improved) the same traffic so far as possible, giving through traffic preference.*—It is extremely desirable to so select the route to be assigned a single number such that there will be the least turning off and on the route, yet we should not confuse a through route with a purely local route.

(c) *Make through routes go near but not necessarily through the most populated and congested districts.*—There has been a tendency in the past which still exist in many places, to route through traffic out of its way in order that it might pass through small towns or through the congested districts of our large cities. This has so congested the traffic on some of these routes as to not only greatly lessen the capacity of the through road but in many places has so congested the local traffic as to seriously interfere with business and the free operations of the local people to such an extent that it has been found in places to actually have lessened the sales rather than increased them. Also, in many small towns, the streets are so narrow and are so congested with parking, particularly on Saturdays and holidays, that the through traffic is now greatly handicapped. Unless the streets of these small towns are widened to fully accommodate this traffic, it should be routed around the town wherever possible. It is, I think, very appropriate that the small towns and districts which are congested should be made to understand that by not providing or making easy to provide plenty of width to accommodate the heavy traffic, would only be the means of sooner or later forcing this heavy traffic to take some other route. Many a small town may stifle its own development by permitting encroaching upon the already too narrow street which sooner or later will force the relocation of the main road to a less congested place.

While many small towns are reluctant to make accommodations for heavy through traffic, in some of them the streets have been so encroached upon that it is difficult for them to accommodate this heavy traffic if they so desire. It should be well for



Pope Lake Bridge on Road No. 1 in Jackson County

many of these small towns that feel it is desirable to continue through traffic over their street, to be looking forward now to the proper accommodation of this traffic either by widening the streets or restricting parking on same. If this can not be satisfactorily done, means should be sought for keeping the heavy traffic out of such towns. Hence, while the through routes should tap the populous centers, as that is the place the traffic originates, it is not necessary and frequently undesirable that the route be marked through the most congested districts.

(d) *Select and mark a large number of through routes in densely populated territory so as not to congest traffic.*—The selecting and marking of a very few through routes will naturally concentrate more traffic upon these routes. In many densely populated districts such routes are now too heavily traveled. Hence the importance of selecting a relatively large number of through routes in order to keep through traffic scattered in these congested districts so far as possible. Two or more main through routes should never be marked over the same stretch of road except where it is absolutely necessary to do so. By a proper selection and marking of these routes in the densely populated areas, the heavy through traffic might be scattered over more roads than it now goes over, which should be a relief to the roads which are now taxed beyond their capacity. For the above reasons, in the numbering of interstate highways, *I know of no one thing which would be more objectionable than to confine this marking to too small a number of highways.*

(e) *Keep in mind the future extensions of the system and provide for same so far as possible.*—In selecting the interstate routes, each to be assigned a single number throughout, we should keep in mind the future extension of the Federal system and assign numbers to the routes now laid out so far as to harmonize with the extensions and new routes which it is quite evident will be selected in the not far distant future. I might refer to a single example, that is, of the east and west routes around the south shore of Lake Michigan where, within a few years, one or more additional east and west routes will undoubtedly be established.

(f) *Interstate numbering system should not necessarily be confined to the Federal primary system, but rather to the 7 per cent system as a whole.*—While it might appear at first that the numbered through continuous routes should be confined to the Federal primary system, this, I would say, would depend on how the primary system is selected. I believe that in selecting the primary system by the Federal Government that it will be necessarily influenced to base its selection largely upon traffic conditions of the roads at present. On the other hand, I believe that the marking of the through routes should be done with a view *of having the most desirable marked routes in*

future years rather than the most desirable routes just at this time. The changing of the marking in the various States to conform with a nation-wide system of numbering will of necessity be several years in being brought about. Hence the extreme importance of numbering the roads so that they will most nearly fit traffic conditions in the future. For the above reasons, I believe that in *applying numbers to a continuous system that the Federal 7 per cent system should be considered as a whole* and, further more, that an account should be taken of other roads which eventually will become part of the national system even though it might be recognized now that it will be a number of years before same will come about.

If these factors are taken into account in applying a uniform system of numbering to interstate highways, the less embarrassment and confusion should result in future years in making this system most serviceable to the public.

The substance of this argument is that the development of a national system of highways is in its primitive form, and any marking of an interstate system should recognize this in order to so number the system to be of greatest service to the general public in future years.

3. Shall Routes Be Marked by Name or Number, or Both?

For convenience in designating a road on the map, in the field, and keeping records and making reports, every through route should be assigned a *number* The aggregate amount of time and money saved by using, in many instances, the shorter designation of a number rather than a name makes it imperative to assign a number to every important route.

The designation of a road by name as well as by number may be quite advantageous at times, as the name is frequently connected with some historical event or geographical term which will more readily recall to the mind the location of the road. The assigning of names to roads, however, is a delicate matter and should not be done in haste. I would consider that names of highways may be appropriately selected from: The names of large cities the roads connect, as the New York-San Francisco Highway; a geographical term, as Coastal Highway, Rocky Mountain Highway; a person of national reputation, as the Lincoln Highway; an historical event, as Independence Highway; an Indian tribe, as the Navajo Highway. In fact, many of our routes now are quite appropriately named if such named routes followed a proper course across the country. The question at once arises as to whether the name should follow the same numbered route its full length across the nation. I would say this is very desirable but not absolutely necessary. Hence, every through route should be designated by a common number over its entire length across the nation at the earliest possible date. The naming of the routes should follow as rapidly as suitable names are suggested. My own recommendation is that before any attempt is made to assign official names to the routes that they be first well recognized by their number.

Whose duty is it to assign names and numbers to the interstate highways?—It naturally would follow that the final decision upon a name or number for an interstate route should come to the Bureau of Public Roads, and what the States should do would be to help them in this work. I believe that each State should be given an opportunity to suggest a name for the numbered interstate roads going across it and the Bureau of Public Roads should have these suggested names to aid them in choosing an appropriate name for each road.

4. Method of Applying the Numbering System to Roads

On the accompanying map is shown a method of applying numbers to the main or transcontinental routes. On this map odd numbers are applied to the east and west routes and even numbers to the north and south routes so far as it is deemed practical. Since there are diagonial routes and in order to comply with principles "a" and "b," under 2, departures have to be made some places from these east and west and north and south routes.

As additional through routes are selected and numbered and all the two digit numbers used, I see no serious objection to using three digit numbers, although certainly for the *main routes it is desirable to use no more than two digit* numbers until necessary.

It is very desirable that all interstate routes other than the main transcontinential routes also should be made to harmonize in the adjoining States at the same time the changes are made in the numbers of the main routes. This numbering of the secondary interstate routes, however, could not be agreed upon until the main transcontinental routes are first numbered. This numbering, in conjunction with the numbering of all State routes within the State, could begin with number one and be continuous so far as the harmonizing with the numbers of adjoining States and the numbers of the transcontinental routes would permit.

After the interstate system is numbered, I see no reason for the further disturbance of any State system of numbering except so far as necessary to change the numbering of any main through routes later added to the national numbering system. This would mean that in any State only the routes assigned an interstate number and such additional few routes in that State as would conflict therewith would have to be changed. It would, of course, be improper to have in any State two roads with the same number.

As more transcontinental routes were selected and numbered, for this we would naturally expect, they would be assigned numbers beginning with the next after the last through route. Such additions to the system would usually not disturb the numbering system of any State except to merely change the numbers of the route to be taken into the transcontinental system, since the number assigned the new road would likely be greater than any existing State road within the State.

I think it very proper that reference be made here to the system of numbering now adopted by the New England States. It would seem that if their system had been applied to the whole nation it would serve the purpose of a national numbering system very

well. However, I understand that in the New England system the interstate routes are numbered from 1 to 99 and intrastate routes from 100 up in each State. Since with the whole nation there would be more than 100 interstate routes, and since it is desirable to use the route numbers with two digits for either intra or interstate numbers, I believe that the purely State routes may just as well be kept below 100 so far as possible. This would then require very few changes in the present system of numbering in any State.

5. Kind of Markers to Use in the Field

The field road markers should show the following:

(a) State in which the road is located.

(b) Route number and name of road after the name has been well established.

(c) Whether it is a Federal, State or county road.

(a) The State in which the road is located might be indicated by the name of the State, or by a design characteristic of that State only, such as the Keystone used by Pennsylvania, the State border used by Ohio, etc.

(b) It goes without saying that the route *number* should be the most conspicuous feature of the marker, as it is this we desire to feature. I can think of no better arrangement of the road name than to place it on a small rectangular plate just over the number marker as some of the States are now doing. This arrangement has several advantages: (1) It places the name out separate and distinct from the rest of the symbol where it can be easily seen; (2) it permits placing and taking down at will the name plate at any time without disturbing the number plate. This will be advantageous where the name is not desired on the marker or for other reasons it is not desired to put it up at the time of erecting the number plate; (3) this simple design of name plate is economical.

(c) It is believed that it is desirable to recognize in road marking three distinct classes of roads, namely, Federal, State and county roads, and to have a separate and distinct design of marker for each.

Federal Roads.—Although under our present laws most of the State roads are really "State roads" and should be so labeled in spite of the Federal aid that has been given them, there are, however, many roads in the Forest Reserve and on other public lands that are truly "Federal roads," and they should be so marked. Inasmuch as these roads will frequently be the continuation of the numbered roads outside the reserves, parks, etc., and since by number is the most convenient way to designate a road, either in the field or on the map, these routes should be assigned a number which is the continuation of the number outside such public grounds. Also, it seems not impossible that the Federal Government may in the near future assume greater control over the through routes of the country and perhaps assume complete responsibility for financing, constructing and maintaining same. Then these routes would also really become Federal roads and should be so labeled. As a Federal route marker for such roads it is suggested that a shield design, which is a part of the seal for the United States Department of Agriculture, might be used as a border with the copy on it, "Federal route," and the route number.

State Roads.—State roads should be labeled in the field with a marker which would clearly show the number and that the road is a "State road." Also, the State in which the road is located should be indicated on the marker either *by name* or a distinctive *design* for that State. Most of the States now have such a design, such as the keystone of Pennsylvania, the outline map of Ohio, etc. Many people who travel extensively now believe that the main through interstate highways, about which this paper is mostly concerned, should have a separate and distinct design of marker throughout all the States. There is much argument for this. However, it would seem that a proper marker for such roads shoould indicate that they are Federal routes, and until such time as the Federal Government assumes greater responsibility for them it is perhaps a little hasty to so label them.

County Roads.—Although not necessarily a subject for this paper, it is believed that a distinctive design of marker might be used all over the country to distinguish main connecting county roads from the Federal and State roads. There are certain *main county roads* which should sometimes be shown on the maps and that are in good condition. Also, while the State roads are under construction it is frequently convenient and desirable that through traffic use some of these main county roads. It is only fair that the traffic know that such roads are county roads and not State-maintained roads. Also, if such roads are marked it is easy to direct traffic over them. As a design of such marker, it is suggested that such county roads might be labeled with the double rectangular design with a copy "county road" in the upper rectangle and the letter by which the route is designated in the lower rectangle. The counties should agree on a common number or letter to designate such main county roads that cross the county line, as the States are attempting to do on the interstate routes.

It will be observed above that the whole scheme of marking in the field is to show the *route number*, what *unit of government* is responsible for the road, and the State in which is located the State or Federal route, together with the *name of the road*, if it has one.

Frequency and location of route markers—The route marker should be located on separate posts along the roadside, or on telephone poles, or both. It is believed that aften a combination of both methods will best serve the purpose. The separate post arrangement along the road shoulder interferes with the mowing of the roadside and frequently is knocked down by traffic if placed close enough to the road to be readily observed. However, the advantage of having these markers on separate posts near road intersections is very great. Where traffic is to turn to the right or left the marker should be put up just before reaching the corner with an arrow, or letter "R" or "L," indicating the direction of the turn. When the numbered route goes straight ahead the marker should be placed just beyond the intersection. Between the road intersections, markers should appear on the telephone poles or on the backs of the danger warning signs so that at no place on a main road would there be more than one-half mile between markers. Where the road right of way is narrow and the telephone poles close to the traveled way, the

road markers are more desirable on the poles, since on such roads it is more necessary to keep the roadway unobstructed. For this reason States are displaying the route marker mostly on the telephone poles. There is much argument for this, and if with this location of markers the white reflector sign (sometimes called a change of direction sign) is used at road intersections where the marked route turns, the system is very effective. Because of the extreme desirability of keeping the roadside mowed, clean and free from any kind of obstructions, it is believed that much thought should be given to the location of these markers and no more of them put on the road shoulders than is really necessary. The one thing that should be emphasized is the sufficient marking and display of signs where a route turns or intersects other main routes. At such places it is extremely important that there be displayed sufficient markers to *conspicuously* show the course followed by each numbered route. If this be done it is not so important that the intermediate markers be so conspicuously placed. At almost no additional cost, fre quently the intermediate markers can be displayed on the back of danger warning signs along the road. Hence, on poorly developed roads where there is a need for many of such danger signs, they furnish most all that is needed for a conspicuous place to display the route number.

6. Design, Shape and Color of Guide, Danger Warning and Information Signs

This subject is now being thoroughly considered and discussed by various organizations in the United States. The working out and agreeing upon of standards is in such an unsettled state that I hesitate to deal with details here. Hence, I will comment on general principles rather than many details of same

Luminous signs should, in my opinion, be of the colors almost universally used by the railroads and now quite generally used in highway work, namely:

RED to indicate STOP.
YELLOW to indicate CAUTION.
GREEN to indicate GO or SAFETY.
WHITE to give general INFORMATION.

Nonluminous signs should follow the same code of colors, so far as practical, *which colors should be combined with various shaped signs to indicate different degrees and kind of danger* and to convey different kinds of information. While I believe for nonluminous signs the variable shapes are even more effective than the different colors, yet there is a very great advantage in combining the colors with the shapes in order to have the colors standard throughout all road signs.

(I will not describe these, as your Committee on Traffic Control and Safety have not been able to come to any agreement on same. Various organizations are studying seriously this subject, and perhaps the Hoover conference is doing most to bring about an agreement on a uniform standard. I believe that we should take full advantage of the information to be secured from this conference before recommending a standard.)

7. Conclusions

In conclusion we may say that (1) interstate highways should be assigned the same number, following the most direct routes frequently traveled across the country. (2) Such numbers should be shown on maps and should be sufficiently displayed in the field so as never to leave one in doubt as to how to follow same. (3) Since much foreign traffic travels such routes, it is very desirable that they be marked with a standard and uniform system of guide, danger warning, and information signs. (4) To avoid an undue concentration of traffic on such roads it is *imperative* that a relatively large number of such routes be so marked and that the selecting and marking be given special study in populous districts so as to provide ample opportunity and encouragement for heavy through traffic to miss such districts where such traffic is not interested in passing through same.

Briefly, it may said that the object sought in naming and marking interstate highways is to aid in getting through traffic safely from its origin to its *lestination* most *conveniently*, in the *shortest time* and at the *least cost* consistent therewith.

I believe I have gotten far enough into this subject to learn of its extreme importance and of the careful thought and study that should be given the naming and marking of a system of interstate highways. While much of the information concerning same may have to come from the various State highway departments, it will have to have a head somewhere, and I believe one man should be employed by the Bureau of Public Roads for at least a year to make a special study of this subject before any attempt is made to number and mark a system of interstate routes.—American Highways.

HERITAGE

A highway runs beside my door—
Just a broad, straight road and nothing more—
Except when the westering sun droops low
Till the dust in the air takes a golden glow
Like a veil or a web, and within its sheen
The present fades as the past is seen.

Then like a dream down the broad highway
Pass women of old and of yesterday,
Spartan mother, a jeweled queen,
Peasant martyr and Magdalene;
Fair young faces unmarked by years,
Sad eyes faded and dimmed from tears,
Brave, strong shoulders unbent by loss,
Old backs bowed from a long-borne cross.
Rank on rank, a mighty throng,
They march to the beat of an unheard song;
Mothers of men they have toiled and wept
That a dream might live and a flame be kept.

Then from afar, like the whir of wings,
A voice in majestic pæan sings:
"These are they who have journeyed through,
They have kept the faith, they have builded true,
And the way will never be quite so long
Because they have wrought so fair and strong."

The vision fades . . . and the road once more
Is only a road by my open door.
Through a mist of tears I lift mine eyes
To the first faint star in the twilight skies
And breathe my prayer on the evening breeze:
"Thank God for my heritage from these!"

—Lytton Cox, in The Literary Digest.

Road 4, St. Lucie County, between Wabasso and Vero—Bituminous Macadam on 8-inch Rock Base

HIGHWAY SAFETY FIRST SLOGANS

The State Highway Department of Ohio is using a number of safety first slogans at safety exhibitions in an effort to reduce motor accidents. Several of these were originated by the department and have found wide vogue.

Here are some of them:

1. Don't try to scare locomotives with your horn.
2. A road hog roots up macadam with his nose.
3. Our roads are wide and smooth, rough.
4. Death is so permanent—take a minute or two at those dangereous railroad crossings.
5. Tragedy in six words: Speed increase, Breath ceases, Rest in pieces.
6. Horse sense as well as horse-power should enter into the operation of motor vehicles.
7. Live to ride another day by obeying all warning signs.
8. Believe in highway warning signs—they mean what they say.
9. Drive with care—you may meet a fool.
10. A reckless driver is a criminal.
11. Keep your hands on the wheel—let your girl hug herself.
12. The three "H's," "Hootch—Hugging—Haste," cause 75 per cent of the motor accidents. —Ex.

"He sped across the railroad track,
To beat the rushing train,
They put the pieces in a sack,
But they never found his brain."—Ex.

Contracts Awarded by State Road Department of Florida January 1, 1925-January 16, 1925

Contractor	Proj. No.	County	Length Miles Roads	Length Feet Bridges	Contract	Type
Atlantic Bridge Co.....	38-B	Escambia	....	1570	$ 289,113.77	Conc. & Steel
R. H. H. Blackwell.....	45	Madison	....	910	124,902.27	Conc. & Steel
Total.....			....	....	$ 414,016.04	

CHAIRMAN'S REPORT

(Continued from Page Three)

give any desired information as to details of the various projects under construction.

Our numerous right-of-way difficulties on the East Coast have been adjusted with the exception of one case in Volusia County. Our attorney will be prepared to furnish any information desired as to these matters.

This being the first meeting of the new year, it might appear to be my duty to submit a detailed report as to the operation of the Department for the past year. This I do not seem necessary to do, as you were fully informed as to our work and its progress as we met from time to time during the year past. You were also furnished by mail monthly statements giving full information as to our convict forces, the cost of maintaining the same, etc.

In addition, you were furnished from time to time an account and statement showing the state of our finances and the cost of the work in each county. However, in order for you to understand why it has not been practicable for your Chairman and Chief Engineer to concentrate on some particular projects a sufficient force of men, equipment and money to complete such projects as soon as some of our people thought they should be completed, it is perhaps in order to remind you that during the past year this Department undertook and was engaged in the execution of one of the largest, if not the largest, and most far-reaching budgets or program of work ever undertaken by a road department with no more resources than were at our command. You are reminded of the great bridge work, the work on Road No. 1 extending from Jacksonville to Escambia County; on Road No. 2 from the Georgia line down thru the heart of Florida to Ft. Myers; on Road No. 3 from the Duval County line to Orlando; on Road No. 4 from the State line to Vero; on Road No. 5 from Alachua County down the west coast to Ft. Myers; and on the other roads being constructed by us.

To carry on this enormous program of work, taxed almost to the breaking point every resource of the Department and demanded the most wholehearted service of every member of our small organization in the field and in the office. Of your service as members and my service as chairman during this year of great effort and trial, it is not proper for me to speak, further than to say that the members of the Department have extended to its Chairman and heads of the different divisions, every courtesy and every possible aid and co-operation. But of the others of our organization I do feel privileged to speak. They, all of them, seemed to know and feel the enormous burden of the work we had undertaken and faithfully and efficiently have they labored in our work. No more loyal and efficient band ever served State or Nation than the men and women who served Florida as employees of its Road Department during the year 1924.

Respectfully submitted,

H. B. PHILIPS,
Chairman.

TWENTY YEARS OF ROAD BUILDING

(Continued from Page Thirteen)

ence is the result largely of several ideas developed during the period since 1904, among which I would enumerate the following as the most important:

1. The classification of highways as interstate, State and local roads and assumption of responsibility for each class by the appropriate governmental body.
2. The creation of State highway departments to administer the construction and maintenance of the State roads.
3. The provision of adequate funds for construction and maintenance of State roads, and the control of such funds by the State highway department.
4. The assessment of the cost of road improvement upon the various classes benefited in proportion to the benefits received.
5. Adjustment of the type of surface construction to the traffic requirements.
6. Continuous maintenance of all roads constructed.

These are the important principles which have been responsible for the progress that has been made in the last 20 years. I know of no better chart to guide our future progress. Wherever they have not been applied in the past it will be the part of wisdom to apply them in the future, for the accumulated experience of 20 years is back of them.—Michigan Roads and Pavements.

Roads are seen the most, used the most, and needed the most of any public utility. It is natural that they should be talked about because they are continually in evidence. Every now and then we hear criticism of the road building program. Now criticism is one of the most necessary requisities of success providing it is intelligent and constructive, but criticism that has no basis in fact is, to say the least, destructive and detrimental. While a well aimed shot may bring down the proper objective, a stone thrown at random will do much damage and no good. If you want your criticism to do good be sure you know the facts. Think before you speak.—Department of Public Works, Nebraska.

Good roads and progress go hand in hand. Let's join the procession.

THE PIONEER

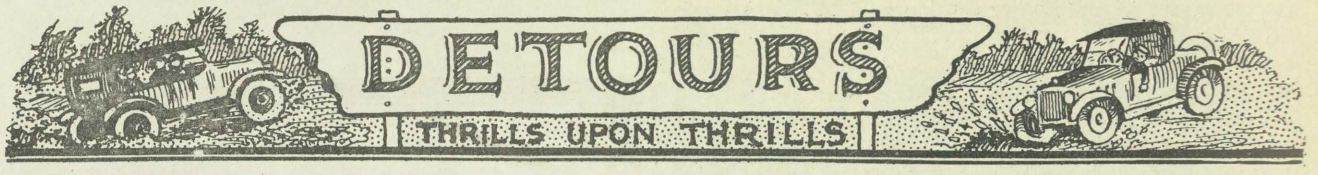
All praise to him who hoists a sail
On seas erstwhile unknown;
To him who dares to mark a trail
Through forests deep and lone;
To him who dares to dream and think,
To speak, and dare, and do,
While others tremble on the brink
Afraid of conquest new.
Thank God for him who lives upon
The far frontiers of thought;
Who is the first to see the dawn
On mountain summits caught;
For him who dares to make a way
Through prejudice and fear.

—Texas Highway Bulletin.

Compulsory auto liability insurance now is in effect in nearly all of Switzerland. As a rule, the auto owner must carry at least $20,000 worth. The laws favor the pedestrian who gets hit. The burden of proof is on the driver. And the car owner has to pay a tenth of the big damage out of his own pocket, and all of the damages up to $25.

They claim it's safe now to cross Swiss roads without running.—Austin American.

One thing you can say for the flivver: It rattles before it strikes.—Arkansas Gazette.



Doubtless

Hard Looking Tramp (To passing Motorist): "Hi mister, I'm going your way."

Passing Motorist: "So I see, but I'll get there before you do."

And the Band Played On

Chester: "Who on earth is that homely girl Jack's dancing with?"

Jim: "That's my sister."

Chester: "She sure can dance."

Here rests the smashed-up body,
Of William Henry Horner
Who never would put out his hand
When driving 'round a corner.—Ex.

"The six wheel automobile is coming" says a motor expert. The average pedestrian is apathetic. By the time the two front wheels have passed over him he is past caring how many more there are.—London Opinion.

Loose automobile nuts are most dangerous when one of them is driving.—Lavang's Weekly.

No Trespassing

The wife and daughter of Col. Berry, Camp Commander, came up to the gate after taps and demanded admission. The sentry objected.

"But, my dear man, you don't understand," expostulated the older woman, "We are the Berrys."

"I don't care if you're the cat's whiskers" retorted the sentry, "You can't get in at this hour."—A. W. L.

A Winning Name

Policeman (producing notebook): Name please."

Motorist: "Aloysius Alostaire Cyprion."

Policeman (puting book way): "Well don't let me catch you again."—Punch (London).

No Trimmings

Diner (who has found a piece of wood in his sausage): "Waiter, I don't mind the dog, but I bar the kennel."—London Opinion.

A MASTERPIECE

Mrs. Brown was almost speechless as she beheld the Grand Canyon.

"Isn't it wonderful?" she gushed.

"I'll say so," responded Mr. Brown, who mixed contracting with politics. "Boy, that was SOME excavating job."—New York American.

Try This On Your Adding Machine

A Chinese truckman in San Francisco sent the following bill to a grocer for delivering orders:

10 Goes
10 Comes
At 50c a Went..... $5

Thought for Cynics

Foolish is the fellow who believes all that he hears, but not nearly so foolish as he who believes nothing. —Life.

The trouble with most dumb-bells is that they aren't dumb.—New York Evening World.

The word "easy" means "easy," except when used in connection with the word "payments."—Baltimore Sun.

Ruth rode in my new cycle car
On the seat in back of me—
I took a bump at fifty-five
And rode on Ruthlessly.
—St. Augustine Record.

She: What would you call a man who hid behind a woman's skirts?"

He: "A magician."—Banker.

Auto-Know-Better Johnson

Too lazy to put on his chains,
Ben Johnson drove to town,
The road was soaked with recent rains—
His wife's name now is Brown.

Many a garage denotes the terminal facilities for the income.—Cleveland Times.

Perfect—Almost

Imagine the comfort that the fond parents got out of the announcement of their son who was attending a high school on Long Island when he stated that he got 100 in his examinations, 50 in Algebra and 50 in Latin.—The Bristol (Conn.) Press.

No Words Wasted

The Boss: I am a boy of few words. If I beckon with my hands that means "come."

New Boy: That suits me. I'm also a fellow of few words. If I shake my head it means "I'm not coming."

Partly Punctured

Driver: I say, is my back tire flat?

Boy: Yes, but only at the bottom; the other part's all right.

A good man sets an example; a good road is likewise an example; and as we have too few good men, so have we too few good roads. Only when we find a travelable road going past every farm, through every village, and city, will it be time to cease talking good roads.—Texas Highway Bulletin.

To abandon the building of good roads would be comparable to a person starting to crawl after he has once started to walk.

GOVERNOR MARTIN'S ADDRESS

(Continued from Page Two)

and ability it possesses in an effort to give to the people of the State the best system of roads possible and will co-operate with you to the fullest extent looking toward that end. If the available resources are not sufficient for this purpose, it is time now that we knew it and advise the people of the true situation.

The development of the State, the prosperity and happiness of her people, depend very largely upon the building of a system of good roads. This administration wishes to set the pace in this development.

At the conclusion of his address, the Governor was extended a rising vote of thanks by the members and was assured that the Department will do all in its power to co-operate and assist in bringing to fruition the comprehensive State program of road construction at the earliest possible moment.

The first quarterly meeting of the Department was held January 15th-16th. Minutes of the proceedings will appear in the March issue.—(Ed.)

Better be a minute late at the crossing than ten years or more ahead of time at the Pearly Gates.

In locating a highway outside of determining what places it shall connect, all personal feeling and sentiment must be left out. Roads must be located purely for engineering reasons.

Status of Road Construction

THROUGH NOVEMBER 30, 1924

Project No.	Contractor.	Road No.	County	Total Length Miles	Clearing Miles	Grading Miles	Base Miles	Surface Miles	Type	Per Cent Complete
26	C. F. Lytle	2	Columbia	11.01				0.00	C.	0.00
36-B	C. F. Lytle	4	St. Lucie	7.12	7.12	7.10		7.12	C.	99.50
37-A	F. W. Long & Co	2	Alachua	.70	.70	.70	.70	.70	S.A.	100.00
37-C	F. W. Long & Co	2	Alachua	3.26	3.26	3.26	3.26	3.13	S.A.	98.32
37-D	Fla. Drainage & Const. Co.	2	Alachua	2.14	0.00	.59			G.	30.00
37-E	Wm. P. McDonald Const. Co.	2	Alachua	7.96	7.96	7.96	7.96	7.96	S.A.	100.00
40-A	C. F. Lytle	4	Brevard	16.17	15.36	9.70	5.82		R.	44.00
40-D	J. Y. Wilson	4	Brevard	6.72	6.72	6.05	0.00		R.	44.20
40-E	Langston Const. Co	4	Brevard	13.60	13.40	13.30	8.64		R.	74.40
43	Wm. P. McDonald Const Co.	2	Marion	10.44	8.50	2.00	0.00	0.00	S.A.	9.00
44	Southern Paving Const. Co.	2	Lake	10.53	10.53	8.30	6.32	.53	B.M.	38.90
503	State Forces	2	Charlotte	20.18	20.18	20.18		19.77	S.C.	99.00
521	Morgan-Hill Paving Co	4	Nassau	12.41	12.41	11.78	8.19		R.	78.40
523-W	M. J. Cole (Co funds)	8	Okeechobee	8.25	8.25	8.25	8.25	8.16	R(S.T.)	99.00
534-A	J. D. Donahoo & Sons	24	Brevard	2.65	2.65	2.12	0.00		R.	80.00
534-B	Noll & Noll	24	Brevard	11.85	11.85	11.85	7.58		R.	62.00
544-B	The Barber-Fortin Co	5	Pasco	11.33	11.33	11.33	11.00		R.	99.00
545	Broadbent & Groeting	5	Hernando	9.51	9.51	9.50	9.51	9.50	S.A.	99.60
560	State Forces	6	Calhoun	20.00	20.00	19.40		18.00	S.C.	99.00
562-A	Weeks & Jackson	8	Highlands	5.37				5.26	S.C.	98.00
564-A	Edgar Chapman (Co. funds)	5	Charlotte	10.88	7.00	5.00			G.	35.00
564-A	Broadbent & Groeting	5	Charlotte	10.88			0.00		R.	0.00
564-B	Boone & Wester	5	Charlotte	9.86	9.86	9.86		2.96	S.C.	85.00
567	State Forces	1	Walton	21.35	13.87	3.41		2.37	S.C.	22.00
571	Hunter & Gladwell	1	Madison	14.73	14.73	13.50		6.04	S.C.	83.00
574	Duval Engr. & Const. Co.	9	Madison	11.66			0.00		R.	0.00
575	State Forces and Ocala Lime Rock Co	3	Putnam	5.46	5.29	5.18	5.02	5.02	R.(S.T.)	90.58
576	S. T. Buchanan & Sons	5	Sarasota	5.68	5.68	5.22			G.	72.00
576	Broadbent & Groeting	5	Sarasota	5.68			0.00		R.	0.00
586	State Forces	1	Jackson-Wash'ton	17.37	8.16	6.94		5.21	S.C.	59.10
588	Morgan-Hill Paving Co	3	Putnam	2.34	0.00	0.00	0.00	0.00	S.A.	0.00
597	J. Y. Wilson	4	Volusia	16.29	14.66	9.77	0.00		R.	20.86
598-A	W. J. Bryson Paving Co	1	Jefferson	9.45	9.45	9.45		0.85	S.C.	95.00
598-B	State Forces	1	Jefferson	7.80	7.41	6.15		4.68	S.C.	75.00
599	M. M. Boyd	2	DeSoto-Charlotte.	7.40	7.40	7.35		5.18	S.C.	87.00
604	C. F. Lytle	4	Volusia	7.72	3.70	1.16	0.00		R.	12.90
607-B	State Forces	13	Clay	6.00	5.40	4.08	0.00		R.	13.40
608	State Forces	4	Brevard	9.25	7.20	5.20			G.	57.00
608	C. F. Lytle	4	Brevard	9.25			0.00		R.	0.00
612	State Forces	1	Leon	17.58	11.07	5.27		0.00	S.C.	24.10
613	State Forces	5	Sarasota	4.26	0.00	0.00	0.00		R.	0.00
622	Sou. Paving & Const Co.	2	Lake	.215	.215	.215	.15	.15	B. M.	95.00
623	State Forces	35	Madison	12.32	5.17	2.22		0.00	S.C.	11.00
625	The Barber-Fortin Co	5	Citrus	10.86	8.68	2.82	0.00		R.	10.02
626	The Barber-Fortin Co	5	Citrus	6.61	4.63	4.63	.66		R.	27.25
627	State Forces	2	Putnam	3.704	2.22	.11	0.00		R.	2.00
628-D	State Forces	3	Volusia	6.47	5.72	2.26	0.00		R.	10.00
629	Mickler-McLeod	8	Highlands	6.00				6.00	S.C.	100.00
630	Myers Construction Co	8	Highlands	11.00			0.00		R.	0.00
633	State Forces	1	Gadsden	9.607	0.00	0.00		0.00	S.C.	0.00
634	State Forces	1	Jackson	11.07	4.42	2.21		0.00	S.C.	20.64
635	State Forces	5	Manatee	1.28	1.28	1.28	1.20	1.17	R.(S.T.)	90.00
636	C. F. Lytle	8	St. Lucie	12.20			0.00		R.	0.00
637	State Forces	10	Leon	18.08	0.00	0.00		0.00	S.C.	0.00
639	State Forces	1	Gadsden	9.84	0.00	0.00		0.00	S.C.	0.00

TOTAL MILES COMPLETE

	Clearing Miles.	Grading Miles.	Base Miles	Surface Miles.
Complete October 31, 1924	1,172.94	1,098.62	404.32	711.77
Complete November 30, 1924	23.14	24.51	13.03	20.62
Total November 30, 1924	1,196.08	1,123.13	417.35	732.39

	Concrete.	Brick.	S. Asphalt	Bit. Macadam	S. T. and Rock	Sand Clay	G. & D.	Total
Complete October 31, 1924	86.78	25.15	80.59	145.92	172.76	366.79	206.37	1,092.69
Complete November 30, 1924	.11	.00	1.54	1.21	14.85	12.17	2.06	31.94
Total November 30, 1924	86.89	25.15	82.13	147.13	187.61	378.96	208.43	1,124.63

Note—The above tabulation shows only those projects that are actually under construction at the present time and does not show projects that have been previously completed. However, the table, "Total miles completed," at the foot includes all projects that have been completed prior to November 30, 1924, and the amount completed in November also. The abbreviations used are as follows:

C.—Concrete. S.A.—Sheet asphalt. B.M.—Bituminous macadam. R.—Rock base. S.C.—Sand clay. G. & D.—Graded and drained. S.T.—Surfaced treated.

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